

Determinants Of Corporate Bond Yield In Indonesia: A Research Proposal

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Abstract—In the category of financial instruments, corporate bonds have the most central position. This is because bonds are financial instruments that are most directly affected by economic variables. In an Initial Public Offering (IPO), the criteria for listing candidates for bonds are tighter than stocks. In addition, corporate bond players are also more selected than stock and derivative players, which must have very large capital in order to get corporate bond returns that can exceed stock returns. This study aims to explore the determinants of corporate bond yield related. Unlike government bonds, this corporate bond has one important factor, which is the ranking of bonds issued by PEFINDO. In addition to bond ratings, there are several other determinants derived from namely financial ratios (DER, CR and interest coverage), economic variables (interest rates and inflation), company size and yield to maturity. Because this research is still a proposal, the expected outcome is the modeling of corporate bond yields on the IDX referring to the bond risk premium model. The author's modeling will add to the unique determinants of bond yields that have not been discussed in depth by previous researchers namely bond rating, interest coverage and yield to maturity. The bond rating determines whether or not the company's bonds are in the eyes of investors in addition to being a requirement for the trading of corporate bonds on the IDX. Bond ratings are determined by interest coverage and yield to maturity of the bond issuer, company size and yield to maturity.

Index Terms— Corporate Bond Yields, DER, CR, Interest Coverage, Interest Rate, Inflation, Ratings and Maturity

1 INTRODUCTION

The development of corporate bonds began to be significant as an investment tool and financial instrument since 2001. According to [5], [9], [10] and [8] this was due to the impact of the monetary crisis that hit Indonesia and world in 1997-1998 where many banks in Indonesia were liquidated or merged to maintain their existence and after that phase or since many banks have tightened loan procedures causing companies that are in need of funds to expand their businesses or pay off their debts and to meet the company's financial needs in the short and long term, begin to look at bond instruments as an alternative fundraising. After the 2008 global financial crisis, the growth of bond issuers on the IDX also showed remarkable developments not inferior to stock issuers. According to [2] from the point of view of long-term debt issuers (debt borrowers), there are several advantages of issuing bonds: a) The cost of debt is limited. Bondholders do not enjoy the company's profits that are soaring. b) Not only are costs limited, but the expected returns are usually lower than ordinary shares. c) If debt financing is used, the owner of the company (majority shareholder, for example) does not participate in controlling its management d) Payment of debt interest can be reduced as a tax burden e) Flexibility (flexibility) in the company's financing structure can be achieved by the inclusion of call and put option in the bond indenture. However, investors prefer to invest in bonds over shares for 2 reasons, namely: a) Stock volatility is higher than bonds, thereby reducing the attractiveness of investment in shares 3) Bonds offer positive returns with fixed income, so bonds provide more collateral rather than shares. Thus, the benchmark from investors to obtain a safety margin is a risk-free rate of return (SBI) coupled with requests from investors for an additional rate of return above a risk-free return because they are willing to hold the risky securities. The interest rate on bonds is usually higher than the SBI (Bank

Indonesia Certificate) interest rate. If the bond interest rate is the same as the SBI rate, of course, investors will choose to invest in SBIs that have a much smaller risk than bonds. Based on this reality, the bond interest rate is calculated by adding a risk premium to the base interest rate (usually the same as SBI). This risk premium is the main attraction of bonds. What is important to note is that the greater the interest rate on the bonds offered, the greater the risk that accompanies them.

Since the end of 1998 monetary crisis, corporate bond issuance has shown an increasing tendency that is even able to compete with stock emissions. The improved macroeconomic condition marked by the drop in Bank Indonesia interest rates (SBI) and inflation have made bank deposits not so attractive to investors, causing corporate bonds (corporate bonds) to be attractive to investors. After the monetary crisis, the banking sector has improved itself, causing lending to corporations to take a long time so that the corporation in its financing is experiencing obstacles and one of the solutions is by issuing bonds. Corporate bond yield is the most important factor for consideration by investors in investing in corporate bonds. Investors will always calculate how much the maximum investment income and the measurement that always wants to know is yield. This research was conducted to find out how far the influence of financial ratios, macroeconomic, company size, maturity and bond rating on corporate bond yields. The sample in this study were companies that issued bonds for the period 2004 to 2019. Then using financial statement data as of December 31 from the Indonesian Bond Market Directory 2005-2020. The independent variables that function as explanatory variables are measured by Debt to Equity Ratio (DER), Interest coverage, Current ratio, Maturity Bonds, Interest Rates, Inflation, and Company size (size). The relationship between corporate bond returns and various explanatory variables will be modeled by panel data regression estimates. Panel data regression models selected both Common and Fixed and Random Effect are determined based on the results of the Chow and Hausmann test. The use of panel data regression in corporate bond yield modeling refers to cross section (i) and time series (t) data categories used by us.

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2 LITERATURE REVIEW

2.1 Bond Price

Bond Price is a price if we want to buy or sell bonds in the capital market through exchange or OTC transactions (over the counter). Bond prices and yields are always inversely or negatively related. This situation means, if the bond yield has increased the bond price has decreased and vice versa. There are two important factors determining the price of corporate bonds, namely: the time flow of coupon payments on bonds and the characteristics of bonds. To assess the price of bonds associated with the interest rate there are several approaches that can be used, namely a) Spot interest rate b) Futures interest rate. Volatility of bond prices is influenced by factors including: bond yield volatility, bond prices that move against the interest rate, bond price volatility is directly related to term to maturity. Bond price volatility increases when the term to maturity also increases, a decrease in bond interest rates causes an increase in bond prices, high-coupon bonds indicate that price fluctuations are lower in the rate of change that price fluctuations are lower in certain yield change levels and bond price volatility is opposite to the coupon rate. The higher yields will the lower bond prices.

2.2 Bond Yield

Yield is a component of return that reflects the cash flow or income periodically obtained from an investment. Capital gain (loss) is an increase (decrease) in the price of a security that can provide profits (losses) for investors. Mathematically the total return of an investment is: $\text{Total return} = \text{Yield} + \text{capital gain (loss)}$. Yield is a measure of the annual rate of return that investors will receive or the results obtained by investors if they invest their funds in bonds. There are three bond yield measurements that are often used by dealers and portfolio managers, namely: a) Current yield is the yield yielded by current bonds by linking coupons that have a period of one year and bond market prices b) Yields to maturity (yields to maturity) is the internal rate of return of the investment in question c) Yield to buy back (yield to call) there are several bonds that can be repurchased before maturity, so the results to measure until purchased are cash flow obtained until bought by the issuer.

2.3 Term of Interest Rate

There are four well-known theories that discuss the yield curve of interest rate structure, namely:

1. The expectation hypothesis theory, states that investors always expect that the expected interest rate is the same as the forward rate. Based on this theory, both short-term and long-term investors will hold short-term or long-term bonds the same because the interest rate is the same as the forward rate.
2. Preferred liquidity theory (liquidity preference theory), which states that short-term investors usually like to hold long-term bonds if the forward rate is greater than the investor's expected short-term interest rate. Investors hold short-term bonds if the forward rate is smaller than the interest rate expected by investors.
3. Preferred habitat theory which rejects the statement that risk premium must increase slowly (uniformly) in accordance with its maturity. However, this theory states that the risk premium must increase according to its maturity only if all investors have the desire to liquidate all their investments in the short term in

which all borrowers hesitate to borrow long-term.

4. Market segmentation theory that explains, that the structure of the interest rates for different maturity bonds can be separated or perfectly segmented. The interest rate of each bond is determined by the demand and supply of the bond itself, and is not influenced by expectations of the return of other bonds and no substitution. This theory gives the sense that investors have a preference for one bond because of the expected rate of return on the bond itself.

2.4 Risk Premium

Bond risk premium is an additional risk for investors who are compared if they have government securities (risk free rate). SBI interest rates or later short-term debt securities to be issued by the Ministry of Finance are always traded and used as a benchmark or basis for interest rates. Spread is a risk that is tolerated by investors for the purchase of non-government bonds issued and the difference is known as risk premium. The interest rate that is given is usually higher than the interest rate of SBI (Bank Indonesia Certificate). If the interest rate of bonds in the market is the same as the interest rate of SBI, of course investors will choose to invest in SBI that has a much smaller risk than bonds. Based on this reality, the bond interest rate is calculated by adding a risk premium to the base interest rate (usually the same as SBI). This risk premium is the main attraction of bonds. What is important to note is that the greater the interest rate on bonds offered, the greater the risk that accompanies it. Determining the desired rate of return has very many variables to consider. This rate of return is the result of the amount of risk free interest rate and risk premium that investors want. That is, investors investing in investment instruments require a minimum rate of return equal to a risk-free rate of return. Additional return on investment, i.e. the amount of risk premium that is tolerated by investors or risk premium in the industry in which the investor is investing. There are several factors that must be considered in discussing risk premium. First, market risk is risk that cannot be controlled by anyone. The greater the risk premium the investor wants, the greater the desired rate of return. The difference in risk premiums between investors is very large, influenced by industry risk and specific risk. The benchmark that investors always use in buying or selling bonds is return. This means that the price of the bond is determined by the yield that must be met so that investors / bondholders buy / sell bonds. These benefits are a reflection of the prevailing interest rates and risks of investing in bonds, known as risk premiums. If the bonds are issued by the central government, then the benefits are market results (interest rates apply) and the risk is considered zero. While [4] provides an illustration of the final amount of final wealth offered by a risky investment over an investment that is definitely called the risk premium, where the increase in the final wealth of expectations (or expected return) on certain investments is needed to compensate investors for the risk arise. For a risky investment with a certain final wealth, investors who are more risk averse will have lower certainty equivalents and a higher risk premium when compared to other investors who are less risk averse.

3 HYPOTHESIS DEVELOPMENT

3.1. Financial Ratio Variable and Bond Yield

The results of research [7] shows that the yield to maturity is

higher in bonds with low liquidity. This indicates that the risk premium (yield differential) between the notes (notes) with the T-bill decreases with respect to the maturity of the debt. The reason is that every transaction is always associated with transaction costs, so that the more liquid debt securities will have an impact on higher debt securities. With lower bond prices, it is usually more liquid compared to higher priced bonds (consideration of transaction costs). Therefore, asset liquidity becomes an important factor that must be taken into account in the price of the asset itself (asset pricing). Research [1] states that credit risk will have a positive effect on increasing trade liquidity. Interest Coverage Ratio is a ratio that compares earnings before interest and taxes and long-term debt, this ratio shows how far profit before interest and taxes can be reduced to pay to pay long-term debt interest. The smaller the interest coverage ratio, the greater the risk (unable to pay debt). Thus the alternative hypothesis can be written as follows

H1: Financial ratio variable influences company bond yield.

3.2. Macroeconomic Variables and Bond Yield

Macroeconomic factors are factors that originate from outside the company such as interest rates, inflation, exchange rates and others. These factors affect the level of performance on the capital market. The movement of market interest rates provides its own potential risks for bond investors. The greater the price volatility of a bond due to changes in the interest rate, it means the greater the interest rate risk (interest rate risk) on the bond, or the more sensitive the price of the bond to changes in interest rates. Influence of inflation on bond yields where if inflation is high, the yield level requested by investors will be higher causing the bond prices in the secondary market to be depressed. The high yield requested by investors will make issuing companies offer bonds with high interest rates. In [2] shows that macroeconomic variables have a positive effect on the risk premium of corporate bonds. The inflation rate has a positive effect on rising market interest rates in general. For foreign exchange rates, the appreciation of foreign currencies against the domestic currency allows investors to divert funds into foreign currencies, thereby impacting demand for returns until the bond maturity increases. Alternative hypothesis is formulated as follow:

H2: Macroeconomic variables affect corporate bond yield.

3.3. Size of the Bond Issuing Company and Bond Yield

Company size can be measured using total assets, sales and equity. While there are researchers like [5] who state that large companies are less risky than small companies because small companies have greater risks and when the bigger the company, the potential to diversify its non-systematic risk is also greater so as to make the risk of the company's bonds decrease. Research by [6] proves that the larger the company will have a lower yield, because large companies have low market risk. Their results also prove that the larger the company will have a higher bond rating because of low market risk that will reduce yield. While [3] argue that because total debt and firm size have strong and positive correlations, company size can also be used as a proxy for measuring liquidity. Their results also prove the size of the company shows significant value and is positive, meaning that the larger the size of the company, the higher the conservatism of management. Thus the alternative hypothesis:

H3: The size of the bond issuer affects bond yield.

3.4. Characteristics of the Bond Issuer and Bond Yield

In this case what is meant by the characteristics of a bond issuing company is maturity. The maturity period of a bond is one of the characteristics that really must be considered by investors. The maturity period is the length of a period until a certain date on which the financial instrument is scheduled to make its final payment, or the owner has the right to liquidate. The maturity period is an important characteristic of financial instruments such as bonds. Bond price fluctuations depend on the maturity period. More specifically, with all the constant factors, the longer the maturity period of a bond, the greater the price volatility due to changes in market interest rates. According to [4] and [7] there is a non-monotonic relationship between the age structure of bonds and credit quality for companies listed in bond ratings. Investors tend not to like bonds with a longer life because the risk that will be obtained will also be even greater. So that the short age of the bonds turned out to indicate the investment grade bond rating. Short-term bonds carry little risk or are in the investment grade category. So that bonds with better bond ratings use shorter bond lives than companies that use longer bond life. The longer the maturity of a bond, the greater the uncertainty. Alternative hypothesis is formulated as follow:

H4: Characteristics of a bond issuer affect bond yield.

3.5. Bond Rating and Bond Yield

Basically the bond rating is one of the important indicators used by investors in making decisions to invest in bonds. One bond risk is default risk. The risk of default arises when a company cannot repay debts that are due. One reason is the insufficient assets available to pay off debt. Investors need information that can indicate the risk of defaults on corporate bonds. Thus [8] and [9] stated that the ranking of bonds aims to provide an indication of the willingness and willingness of the issuer to pay its financial obligations at maturity. The better the rating of a bond indicates that the smaller the bond is to experience default. For investors, the risk of default from the issuer will affect the return that will be obtained. Thus the alternative hypothesis is written as follows:

H5: The bond rating influences the company's bond yield

4 RESEARCH METHOD

4.1. Population and Sample Selection Techniques

The population of this study are all companies that issue and trade bonds in the period 2004 to 2019. Based on these observations the population more than 100 companies. The sample was selected from a population of companies listed and traded on the Indonesia Stock Exchange and ranked by PEFINDO (*Pemeringkat Efek Indonesia* and in English term: Credit Rating Indonesia). Sample selection is using purposive sampling method, with the following criteria:

- a) All bonds issued by companies listed on the Indonesia Stock Exchange during 2004 - 2019 and had a PEFINDO rating.
- b) Bonds were actively traded on the Indonesia Stock Exchange during 2004-2019 and have a minimum age of 5 years and a maximum of 30 years.
- c) Routinely presents annual financial statements / have

annual financial reports as of December 31, during 2004-2019.

- d) Bond-issuing companies that did not experience losses or were considered defaults during 2004-2019.
- e) Bonds were not callable by the issuer during 2004-2019 and were not zero coupon bonds and perpetual bonds.
- f) Bond issuing companies are not doing hard corporate actions such as CEO turnover, mergers and acquisitions and some types of stock split or reverse stock split.
- g) Bond issuing companies are members of LQ 45 and have implemented Good Corporate Governance (GCG) and there is evidence of Sustainability Report (SR).

4.2. Operationalization of Variables

4.2.1. Dependent Variable (Bond Yield)

Bond yield is a component of return that reflects periodic cash flows or income from bondholders. The bond yield component is the sum of coupon yields that are fixed income and capital gain or loss due to the difference between the selling price and the purchase price. Capital gains occur if the selling price is greater than the purchase price and vice versa capital loss occurs if the selling price is smaller than the purchase price. The assumption of this bond yield calculation is that there is no callable bond from the issuer.

4.2.2. Independent Variables

a. Financial ratios (proxies include DER, CR and IC)

Debt Equity Ratio (DER) is the ratio of debt to total equity. DER measures the percentage of funds provided by creditors. Companies that have a large DER will have a greater risk than companies that have a small DER. Current Ratio (CR), which is the ratio between current assets and short-term liabilities (current liabilities of a company). The greater the smooth ratio (CR), the smaller the credit risk. Interest Coverage (IC) is formulated as Profit Before Interest and Tax divided by Interest Expense. Basically Interest Coverage is the ability of a company to pay interest on its debt loans. The greater the Interest Coverage of a company, the smaller the company's credit risk.

b. Economic Variables (the proxies include interest rates and inflation)

Interest rates, can be defined as a risk-free interest rate (risk free) 1-month Bank Indonesia Certificate (SBI). The size of the interest rate depends on the macroeconomic conditions that develop in Indonesia. Inflation, is defined as the difference in the Consumer Price Index (CPI) of the current period with the previous period then divided by the CPI of the previous period.

c. Size of the Issuing Company (the proxy is size).

Proxy of the size of the company is the total assets owned by the company in a certain period. This variable functions as a covenant for the related issuer.

d. Company Characteristics (the proxies are yield to maturity).

Issuance characteristics, the proxy of bond issuance characteristics is yield to maturity (YTM). Yield to Maturity is the rate of return or income that an investor will obtain if he has a bond until maturity. YTM can be calculated with a simple

approach known as the YTM Approximation with the formula from [6] and [10] as below:

$$YTM = ((C + (R-P)/N) / [(R+P)/2] \times 100\%) \dots\dots\dots (1)$$

where:

C = coupon

n = remaining time period (years)

R = redemption value

P= purchase value

e. Issuer Bond Rating (the proxy is investment grade).

Bond ratings are divided into two categories, namely: a) Investment grade category for companies with low default risk. This category is stated in rank (AAA, AA, A, BBB) b) Speculative grade (non-investment grade) category for companies with high default risk. This category is stated in rank (BB, B, CCC, D). This variable is stated in dummy, i.e. if 0 is stated in non investment grade and 1 is included in investment grade category.

4.3. Analysis Method

To test alternative hypotheses H1 to H5, multiple linear regression is used. Because there is an element of cross section (i), the bond issuing company and the time element (t), which is the bond issuance period from 2004 to 2019, the type of regression is panel data regression. The model analysis method is displayed as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \beta_7 X_{7it} + \beta_8 X_{8it} + e_{it} \dots\dots\dots (2)$$

where:

Y_{it} : corporate bond yield i at time t

X_{1it} : company debt to equity ratio i at time t

X_{2it} : company interest coverage i at time t

X_{3it} : company current ratio i at time t

X_{4it} : interest rate (Bank Indonesia certificate) at time t

X_{5it} : inflation at time t

X_{6it} : company size i at time t

X_{7it} : yield to company maturity i at time t

X_{8it} : rating / rating of corporate bonds i at time t

α : constant or intercept

e_{it} : disturbance error company i at time t

β_1 to β_8 : regression coefficient X1 to X8

The regression model above will be categorized as a fixed effect or common effect estimation model with the results of the Chow test namely the cross section chi square probability value. If the chi square cross section probability value > 0.05 then it is better to use the fixed effect method. Furthermore, to ensure the estimation method is fixed effect or random effect, the Hausmann test results are used, namely the value of the random cross section probability. If the random cross section probability value < 0.05 then the estimation method is fixed effect and vice versa for the random effect method. The above model refers to the research of [5], [9], [8] and bond risk premium modeling from [3]. Variables X1 to X3 are related to H1 testing, variables X4 and X5 for H2, variables X6 for H3, variables X7 for H4 and terminated X8 for testing H5.

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